Abdullah Al-Shabili

Brooklyn, NY ◆ abdullah.alshabili@nyu.edu ◆ +1-(929)-307-8207

EDUCATION

New York University, NY, USA *Aug 2017 - Present*
PhD in Electrical Engineering *Expected May 2021*
Advisor: Professor Ivan Selesnick
Awarded Ernst Weber Fellowship
Selected course work: Convex and Nonsmooth Optim., Advanced ML, Math. Tools for Data Science

Khalifa University, Abu Dhabi, UAE *Aug. 2010 – May. 2017*
M.Sc. in Electrical and Computer Engineering GPA: 3.92/4.0
B.Sc. in Electrical and Electronic Engineering GPA: 3.89/4.0

EXPERIENCE

Facebook, CA, USA *September 2020 - December 2020*
Research Intern - Image Processing, Facebook Reality Labs (FRL)

- Design efficient computational image processing algorithms based on classical iterative algorithms and deep learning.

Mitsubishi Electric Research Laboratories (MERL), MA, USA *May 2019 - Aug 2019*
Research Intern - Computational Sensing Group

- Developed a robust linear inverse problems solver by integrating deep learning denoisers and a proximal quasi-Newton algorithm. The proposed robust plug-and-play algorithm resulted in a conference publication and a patent to be filed soon.

New York University, NY, USA
Research Assistant - Optimization for Machine Learning & Signal Processing *Aug 2017 - Present*

- Researching the internal working mechanism of deep learning denoiser.
- Researching inverse problem solvers that integrate deep learning capabilities with iterative optimization algorithms.
- Developed novel sparsity-inducing non-convex regularization framework that preserves the overall convexity in sparse approximation.

Teaching Assistant - Signals and Systems *Aug 2018 - May 2019*

- Designed and taught lab sessions that reflect real life applications of the signals and systems course to intrigue the students' interest using Matlab programming language.

Khalifa University, Abu Dhabi, UAE
Teaching Assistant - Engineering Design *Jan 2017 - May 2017*
Teaching Assistant - Signal Processing *Jan 2016 - Dec 2016*
Teaching Assistant - Microprocessor Systems *Aug 2015 - May 2016*

SELECTED PUBLICATIONS

A. H. Al-Shabili, I. Selesnick, "What does a Convolutional Neural Network Denoiser Learn?", **In preparation**.

A. H. Al-Shabili, X. Xu, U. S. Kamilov, I. Selesnick, "Plug-and-Play Bergman Proximal Gradient Method with Applications to Poisson Inverse Problem", **In preparation**.

A. H. Al-Shabili, Y. Feng, I. Selesnick, "Sharpening Sparse Regularizers via Smoothing", **In preparation**.

A. H. Al-Shabili, H. Mansour, P. T. Boufounos, "Learning Plug-and-Play Proximal Quasi-Newton Denoisers," *2020 Proc. IEEE Int. Conf. Acoust. Speech Signal Process. (ICASSP)*, Barcelona, Spain, 2020, pp. 8896–8900.

A. Al-Shabili, I. Selesnick, "Sharpening Sparse Regularizers," *2019 Proc. IEEE Int. Conf. Acoust. Speech Signal Process. (ICASSP)*, Brighton, United Kingdom, 2019, pp. 4908–4912.

A. Al-Shabili, L. Weruaga, S. Jimaa, "Minimum Mean Square Deviation in ZA-NLMS Algorithm," *2017 Proc. IEEE Int. Conf. Acoust. Speech Signal Process. (ICASSP)*, New Orleans, LA, USA, 2017, pp. 3869–3873.

A. Al-Shabili, L. Weruaga and S. Jimaa, "Optimal Sparsity Tradeoff in ℓ_0-NLMS Algorithm," in *IEEE Signal Processing Letters*, vol. 23, no. 8, pp. 1121–1125, Aug. 2016.

A. Al-Shabili, L. Weruaga, S. Jimaa, "Adaptive Sparsity Tradeoff for ℓ_1-Constraint NLMS Algorithm," *2016 Proc. IEEE Int. Conf. Acoust. Speech Signal Process. (ICASSP)*, Shanghai, 2016, pp. 4707–4711.

A. Al-Shabili, L. Weruaga, S. Jimaa, "Modal Analysis of the ℓ_0-LMS and ℓ_0-NLMS Sparse Adaptive Algorithms," *2016 IEEE 59th International Midwest Symposium on Circuits and Systems (MWSCAS)*, Abu Dhabi, 2016, pp. 1–4.

A. Al-Shabili, B. Taha, H. Elayan, F. Al-Ogaili, L. Alhalabi, L. Weruaga and S. Jimaa, "Sparse NLMS adaptive algorithms for multipath wireless channel estimation," *2015 IEEE 11th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Abu Dhabi, 2015, pp. 839–844.

F. Al-Ogaili, H. Elayan, L. Alhalabi, **A. Al-Shabili**, B. Taha, L. Weruaga and S. Jimaa, "Leveraging the ℓ_1-LS criterion for OFDM sparse wireless channel estimation," *2015 IEEE 11th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Abu Dhabi, 2015, pp. 845–849.

SKILLS

Programming: Python (PyTorch), Matlab.

Languages: English (Fluent), Arabic (Native Speaker).

PROFESSIONAL ACTIVITIES

Editorial Activities:

- Reviewer of the IEEE Transactions on Signal Processing
- Reviewer of the IEEE Transactions on Image Processing

Membership: Student member, IEEE and Signal Processing Society.